



# BOARD OF DIRECTORS, FLORIDA KEYS AQUEDUCT AUTHORITY

## AGENDA ITEM SUMMARY

AGENDA ITEM: DOE-03

CONSENT:

REGULAR:

MEETING DATE: 09/27/2022

DEPARTMENT: Division of Engineering

### AGENDA TITLE:

Consideration to approve contract with Control System Consulting, LLC for programming and control system consulting services for ongoing and future capital improvement projects in the amount of \$323,670.

DOCUMENTATION: Included:  To-Follow:  Not Required:

Cost to FCAA: \$ 323,670

BUDGETED: Yes  No

Cost to Others: \$ \_\_\_\_\_

Total Cost: \$ 323,670

Department: Division of Engineering

Department Director: David Hackworth  
Digitally signed by David Hackworth  
Date: 2022.09.14 11:09:02 -04'00'

Exe. Director: \_\_\_\_\_

Deputy Exe. Director: \_\_\_\_\_

Internal Auditor: \_\_\_\_\_

General Counsel: IBR

### BOARD ACTION:

Approved:  Tabled:  Disapproved:  Recommendation Revised:

Comments: \_\_\_\_\_

Date: September 30, 2022

Recording Clerk: Pam Aly

# FLORIDA KEYS AQUEDUCT AUTHORITY



1100 Kennedy Drive Key West, FL 33040  
Telephone: 305-296-2454

## MEMORANDUM

**TO:** Kerry Shelby, Executive Director  
**FROM:** David Hackworth, Director of Engineering  
**DATE:** September 15, 2022  
**SUBJECT:** FKAA RFP 0004-22 Capital Projects Programming and Consulting

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### Action Statement

Consideration to approve contract with Control System Consulting, LLC for programming and control system consulting services for ongoing and future capital improvement projects in the amount of \$323,670.

### Background

On July 5, 2022 FKAA advertised RFP 0004-22 seeking qualified consultants to provide programming and control system consulting services for ongoing and future capital improvement projects. On September 13, 2022, the FKAA Board approved selection of Control System Consulting, LLC.

### Purpose and Justification

The purpose of this project will be to provide ongoing support to FKAA staff for all control systems associated with capital projects, including but not limited to programming, review of third party electrical, instrumentation and controls design, in-house EI&C design, submittal review, and field services.

### Financial

These services are included in the budget of each Capital Improvement Project for which they will be utilized.

**CONTRACT**  
**FKAA PROJECT NO.**

THIS AGREEMENT, made and entered into this 30<sup>th</sup> day of September 2022, by and between the Florida Keys Aqueduct Authority, hereinafter "FKAA", and Control System Consulting LLC, hereinafter referred to as "CONSULTANT".

WHEREAS, the FKAA has provided notice of the desired services and carried out the proper selection process pursuant to FKAA policies and procedures, and;

WHEREAS, the FKAA represents that it is a Utility, organized under the State of Florida with the authority to engage CONSULTANT and accept the obligation for payment for the services desired, and;

WHEREAS, the FKAA desires to engage CONSULTANT to perform certain services pertinent to such work in accordance with this AGREEMENT, and;

WHEREAS, CONSULTANT shall provide such services in accordance with this AGREEMENT.

NOW, THEREFORE, in consideration of the premises and the mutual benefits which will accrue to the parties hereto in carrying out the terms of this AGREEMENT, it is mutually understood and agreed as follows:

I. DEFINITIONS; GENERAL CONDITIONS

- A. THE SCOPE OF SERVICES is to be implemented as set forth by this AGREEMENT and by Exhibit A, Project Documentation as attached to this agreement that are made part hereof.
- B. PHASES: A phased approach may be utilized. The FKAA and CONSULTANT shall have the right to negotiate the terms of each phase. In the event the parties cannot agree, the FKAA may select another CONSULTANT or go out for additional proposals in order to complete the subsequent phase(s) of the project. This phased approach shall not waive the FKAA's right to terminate this AGREEMENT during any phase of the project.

II. GENERAL DUTIES OF CONSULTANT

- A. The relationship of CONSULTANT to the FKAA will be that of a CONSULTANT, and CONSULTANT will provide the technical services required under this AGREEMENT in accordance with acceptable quality and practices as identified in the attached Exhibit A, Project Documentation. No employer/employee relationships shall be deemed to be established and CONSULTANT, its agents, subcontractors, and employee shall be independent contractors at all times.
- B. Technical Services. It shall be the responsibility of CONSULTANT to work with the FKAA and appraise it of solutions to problems and the approach or technique to be used towards accomplishment of the FKAA's objectives as set forth in this AGREEMENT upon execution by both parties.
- C. Exhibit A-1 establishes a budget for the project. CONSULTANT shall be responsible for providing, at no additional cost to the FKAA, completed designs, drawings, specifications, reports and other applicable services if the budget for the entire project is exceeded during and up to completion of the final design phase of the project; however, nothing contained herein shall require CONSULTANT to bear additional costs if the additional costs are a result of a change in the scope

of services directed by the FKAA.

- D. CONSULTANT shall be responsible for the quality, technical accuracy, timely completion, of all drawings, specifications, reports and other services furnished by CONSULTANT. CONSULTANT shall perform its services in accordance with generally accepted standards and practices utilized by similar competent firms in effect at the time CONSULTANT's services are rendered. CONSULTANT shall, without additional compensation, correct or revise said error or omissions to the satisfaction of the FKAA.
- E. Approval by the FKAA of drawings, designs, specifications, reports and incidental services or materials furnished hereunder shall not in any way relieve CONSULTANT of responsibility for the technical adequacy of its work. The FKAA's review, approval or acceptance of, or payment for, any of the services shall not be construed to operate as a waiver of any rights under this AGREEMENT or of any cause of action arising out of the performance of this AGREEMENT.
- F. CONSULTANT designates Brian Stark, as its representative to act as liaison with the FKAA. The representative shall manage and coordinate FKAA projects and is hereby authorized to act on behalf of CONSULTANT to act on related matters with respect to performance of services for the FKAA in accordance with the AGREEMENT. Any change to name other person shall be requested in writing to the FKAA, and shall be approved by the FKAA.
- G. CONSULTANT shall attend all meetings, as specified or as defined where the project is discussed, unless the FKAA's representative declares such attendance and participation is not necessary. In addition, CONSULTANT shall attend all additional meetings as may be required to facilitate the project.

III. DATA AND SERVICES TO BE PROVIDED BY THE FKAA

The FKAA shall provide the following:

- A. Furnish or cause to be furnished such reports, studies, instruments, documents, and other information as CONSULTANT and FKAA mutually deem necessary and which are under control of the FKAA.
- B. Pay for all legal advertisements incidental to obtaining bids or proposals from contractors.
- C. The Executive Director or his designee shall act as the FKAA's representative with respect to the work to be performed under this AGREEMENT. The Executive Director or his designee shall have the authority to the extent authorized by the FKAA Board of Directors to exercise the rights and responsibilities of the FKAA provided in this contract. Said authority may include but is not limited to: transmit instructions, stop work, receive information, interpret FKAA's policies and decisions with respect to materials, equipment, elements, and systems pertinent to the services covered by this AGREEMENT.
- D. Pay all permit application filing fees.
- E. Provide access to FKAA facilities.

IV. TIME OF PERFORMANCE

- A. CONSULTANT will begin work promptly after issuance of a notice to proceed.
- B. CONSULTANT'S services called for under the AGREEMENT shall be completed in accordance with the schedule contained in the Project Documentation. If CONSULTANT'S services are unreasonably delayed by the FKAA in excess of 180 days, the time of performance and compensation shall be renegotiated, provided, however, CONSULTANT as a condition precedent to renegotiation shall notify the FKAA within fifteen (15) calendar days from the end of the delay of CONSULTANT'S proposed additional costs incurred by reason of said delay.

V. AGREEMENT PERIOD

The period of service is from the date of execution of this AGREEMENT. This AGREEMENT will terminate at such time as the services required by this AGREEMENT have been completed.

VI. COMPENSATION

- A. The FKAA will compensate CONSULTANT for the services in accordance with a negotiated lump sum, or a not to exceed budgeted amount based on time charges which are based upon hourly rates, plus reimbursable expenses if compensation is based on Method II and other related costs as are specified in this AGREEMENT:

1. METHOD 1 - LUMP SUM

Wherever possible, the scope of services for Services, Projects or Programs shall be thoroughly defined and outlined prior to its authorization. The FKAA and CONSULTANT shall mutually agree to a lump sum amount for services to be rendered and a detailed scope of services. Should the FKAA deem that a change in the scope of services is appropriate, then a decrease or increase

in compensation shall be authorized in writing. In lump sum contracts, CONSULTANT shall submit the estimated man hours, wage rates and other actual unit costs supporting the compensation.

2. METHOD II - TIME/CHARGES NOT TO EXCEED BUDGETED AMOUNT

When a service is to be compensated for a time charge/not to exceed basis, CONSULTANT will submit a not to exceed budget cost to the FKAA for prior approval based on actual time charges which shall not exceed established hourly rates as shown in Exhibit B attached hereto, plus reimbursable expenses and other related costs. The FKAA shall not be obligated to reimburse CONSULTANT for costs incurred in excess of the not to exceed cost amount.

- a. The FKAA agrees to pay CONSULTANT compensation for services rendered based upon the established hourly rates as shown in Exhibit B for services rendered on FKAA projects. The rates listed in Exhibit B may be adjusted upon AGREEMENT of the parties.
- b. In addition, the FKAA shall pay for reimbursable expenses invoiced at the actual cost of expenditures incurred by CONSULTANT if provided in this AGREEMENT as follows:
  1. Transportation and subsistence when traveling in connection with the work required of this AGREEMENT shall be reimbursed in accordance with the published U.S. General Service Administration per diem rates. The method of transportation shall be by the most efficient and economical means of travel (considering time of the traveler, cost of transportation and per diem or subsistence required). Lodging of CONSULTANT'S while on official FKAA business in Monroe County should be arranged and paid for directly by CONSULTANT.
  2. Actual expense of reproductions of documents in excess of that stipulated in the Project Documentation.
  3. Actual expenses of testing, laboratory services, and field equipment, postage, supplies incurred directly for the project, and CONSULTANT'S standard project charges for special health and safety requirements of OSHA.
  4. Actual expenses of overtime work requiring higher than regular rates, when authorized by the FKAA.
  5. Express courier services shall only be utilized with the approval of the Director of Environmental Services or Director of Engineering.
  6. Travel expenses for CONSULTANT'S employees traveling to and from CONSULTANT'S offices shall not be reimbursable unless the travel is required for meetings with FKAA personnel, or as otherwise approved by the Director of Environmental Services or Director of Engineering.
- B. Subcontractual service shall be invoiced at the actual fees paid by CONSULTANT, plus an additional ten percent (10%) of the cost of these services to compensate CONSULTANT, for the procuring and management of the subconsultant, and for the other financial and administrative costs. Subcontractual services shall be approved by the FKAA in writing prior to performance of the Subcontractual work.
- C. Total Compensation (including, but not limited to compensation for subconsultants) for all services

and expenses shall not exceed the budget cost listed in this AGREEMENT, without written approval.

- D. If the FKAA determines that any price for services, however calculated, provided by CONSULTANT, including profit, negotiated in connection with this AGREEMENT or any cost reimbursable under this AGREEMENT was increased by any significant sums because CONSULTANT or any subcontractor furnished incomplete or inaccurate costs or pricing data, then such price or cost of profit shall be reduced accordingly and the AGREEMENT shall be reduced accordingly and the AGREEMENT shall be modified in writing to reflect such reduction.

## VII. PAYMENT

The FKAA agrees that it will use its best effort to pay CONSULTANT within thirty (30) calendar days from presentation of CONSULTANT'S itemized report and invoice and approval of the FKAA's representative, unless additional time for processing is required for payments for basic services, Subcontractual services, and reimbursable expenses as defined in Section VII. CONSULTANT shall submit monthly invoices, as required in this AGREEMENT, which shall include a report of work completed during the respective invoice period. Invoices shall be in a format consistent with those shown in Exhibit C. The report shall be adequate in detail to describe work progress (% completed for each task) and written summaries of work completed. No payment request shall exceed the value of work and services performed by CONSULTANT under this AGREEMENT.

## VIII. MISCELLANEOUS PROVISIONS

### A. Ownership of Documents

A set of reproducible drawings and electronic documents in a format compatible with AutoCadd, Latest Edition, FKAA's computer system, shall be given to the FKAA. Details, design calculations, and all other documents and plans that result from CONSULTANT'S SERVICES under this AGREEMENT shall become and remain the property of the FKAA, including patent and copyright rights, whether the project is completed or not, and will be delivered to the FKAA upon demand. CONSULTANT reserves the right to retain a copy of all such documents for record purposes. Where such documents are required to be filed with governmental agencies, CONSULTANT will furnish copies to the FKAA upon request

### B. Copies of Documents

CONSULTANT shall prepare sufficient copies of all documents necessary to obtain approval through the FKAA's processes, as well as other governmental authorities. The FKAA acknowledges that the materials cited in Paragraph VIII and other data provided in connection with this AGREEMENT which are provided by CONSULTANT are not intended for use in connection with any project other than the project for which such materials are prepared. Any use by the FKAA of such materials in connection with a project other than that for which such materials were prepared without prior written consent and adaptation by CONSULTANT shall be at the FKAA's sole risk, and CONSULTANT shall have no responsibility or liability therefore.

### C. Insurance

Without limiting any of the other obligations or liabilities of CONSULTANT, CONSULTANT shall, at his own expense provide and maintain in force, until all of its services to be performed under this AGREEMENT have been completed and accepted by the FKAA (or for such duration

as it otherwise specified hereinafter), the following insurance coverage:

1. Worker's Compensation Insurance to apply to all of CONSULTANT'S employees in compliance with the "Worker's Compensation Law" of the State of Florida and all applicable Federal Laws.
  - a. Employer's Liability with limits of \$100,000 per person, \$500,000 per occurrence and \$100,000 per each disease.
2. Comprehensive General Liability with minimum limits of \$1,000,000 per occurrence combined single limit for Bodily Injury Liability and Property Damage Liability. Coverage must be afforded on a form no more restrictive than the latest edition of the Comprehensive General Liability policy, and must include:
  - a. Premises and/or Operations
  - b. Independent Contractors
  - c. Broad Form Property Damage
  - d. Contractual Coverage applicable to this specific AGREEMENT.
  - e. Personal Injury Coverage with minimum, limits of coverage equal to those required for Bodily Injury Liability.
  - f. Business Automobile Liability with minimum limits of \$500,000 per occurrence combined single limit for Bodily Injury Liability and Property damage Liability. Coverage must be afforded on a form no more restrictive than the latest edition of the Business Automobile Liability policy, without restrictive endorsements, as filed by the Insurance Services Office and must include:
    - i. Owned Vehicles
    - ii. Hired and Non-Owned Vehicles
    - iii. Employer's Non-Ownership
3. Professional Liability Insurance with minimum limits of \$1,000,000 per claim. Coverage shall be afforded on a form acceptable to the FCAA.
4. Prior to commencement of services, CONSULTANT shall provide to the FCAA Certificates of Insurance evidencing the insurance coverage specified in the foregoing Paragraphs. All policies covered within subparagraphs of section C shall be endorsed to provide the FCAA with thirty (30) days notice of cancellation and/or restriction (ten (10) days notice for cancellation due to non-payment of premium). The FCAA shall be named as an additional insured as to CONSULTANTS liability on policies referenced except Workers Compensation and Professional liability.
5. If the initial insurance policies required by this AGREEMENT expire prior to the completion of the services, renewal Certificates of Insurance of policies shall be furnished thirty (30) days prior to the date of their expiration. For Notice of Cancellation and/or Restriction; the policies must be endorsed to provide the FCAA with thirty (30) days notice of cancellation and/or restriction (ten (10) days notice for cancellation due to non-payment of premium).

6. CONSULTANT'S insurance, including that applicable to the FKAA as an additional Insured, shall apply on a primary basis.

D. Litigation Services

It is understood and agreed that CONSULTANT'S services include reasonable participation in litigation or dispute resolution arising from this AGREEMENT. CONSULTANT'S participation shall include up to 20 hours of services related to litigation or dispute resolution. Any such services in excess of 20 hours shall be an additional service.

E. Authority to Contract

The FKAA represents that it is an Agency of the State of Florida with the authority to engage CONSULTANT for services and to accept the obligation for payment for the services described in this Agreement.

F. Assignment

The FKAA and CONSULTANT each binds itself and its successors, legal representatives, and assigns to the other party to this AGREEMENT and to the partners, successors, legal representatives, and assigns of such other party, in respect to all covenants of this AGREEMENT subject to budget considerations and requirements of law; and, neither the FKAA nor CONSULTANT will assign or transfer their interest in this AGREEMENT without the written consent of the other.

G. Confidential Information

During all times that CONSULTANT is employed on behalf of the FKAA and at all times subsequent to the date of this contract, all discussions between the FKAA and CONSULTANT and all information developed or work products produced by CONSULTANT during its employment and all matters relevant to the business of the FKAA not otherwise being a matter of public record shall be deemed to be confidential. All such information and work product shall be protected by CONSULTANT and shall not be revealed to other persons without the express written permission of the FKAA, unless mandated by order of the court.

H. Non-Exclusive Contract

The FKAA reserves the right to award projects to other firms during the period of service of CONSULTANT. CONSULTANT agrees to cooperate with the FKAA and other firms in accomplishing work that may require joint efforts to accomplish the FKAA's goals. This cooperation, when requested by the FKAA, will include but not be limited to:

1. Sharing technical information developed under contract with the FKAA.
2. Joint meeting for project coordination.
3. Establish lines of communication.

I. Subconsultants

In the event CONSULTANT, during the course of the work under this AGREEMENT requires the

services of any subcontractors or other professional associates in connection with services covered by this AGREEMENT, CONSULTANT must secure the prior written approval of the FKAA.

J. Notices

Whenever either party desires to give notice unto the other, it must be given by written notice, sent by registered United States mail, with return receipt requested, addressed to the party for whom it is intended at the place last written, as the place for giving of notice in compliance with the provisions of this paragraph. For the present, the parties designate the following as the representative places of giving notice to with:

Florida Keys Aqueduct Authority  
1100 Kennedy Drive  
Key West, Florida 33040

CONSULTANT  
Control System Consulting LLC  
PO Box 390248  
Deltona, FL 32739

K. Attachments

Request for Proposal is hereby incorporated within and made an integral part of this AGREEMENT.

L. Truth-In-Negotiation Certificate

Signature of the AGREEMENT by CONSULTANT shall act as the execution of a truth in negotiation certificate stating that wage rates and other factual unit costs supporting the compensation of this AGREEMENT are accurate, complete, and current. The original contract price and any additions thereto shall be adjusted to exclude any significant sums by which the FKAA determines the contract price was increased due to inaccurate, incomplete, or non-current wage rates and other factual unit costs.

M. Records

Records of all expenses relative to project shall be kept on a general recognized accounting basis and shall be available to the FKAA or its authorized representative at mutually convenient times.

N. Personnel

CONSULTANT represents that it has or will secure at its own expense, qualified personnel required in performing the services under this AGREEMENT. The project manager shall be approved by the FKAA. Key personnel will be identified for each project and expected to perform the work assignment as can reasonably be expected, and as approved by the FKAA.

O. Equal Opportunity Employment; Non-Discrimination

CONSULTANT agrees that it will not discriminate against employees or applications for employment because of race, creed, color, religion, sex, age, handicapped status or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion

or transfer; recruitment advertising; lay-off or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. CONSULTANT agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth this non-discrimination clause. This provision applies to all CONSULTANT'S subcontractors and it is the responsibility of CONSULTANT to ensure subcontractor's compliance.

P. Prohibition Against Contingent Fees

CONSULTANT warrants that he has not employed or retained any company or person, other than a bonafide employee working solely for CONSULTANT, to solicit or secure this AGREEMENT, and that he has not paid or agreed to pay any persons, company, corporation, individual or firm, other than a bonafide employee working solely for CONSULTANT any fee, commission, percentage, gift, or any other consideration, contingent upon or resulting from the award or making of this AGREEMENT.

Q. Termination

This AGREEMENT may be terminated by either party by seven (7) calendar days prior written notice, in the event of substantial failure to perform in accordance with the terms hereof by the other party through no fault of the terminating party. CONSULTANT and the FKAA shall also have a right to terminate this AGREEMENT for convenience at any time by thirty (30) calendar days written notice to either one or the other. In the event the project described in this AGREEMENT, or the services of CONSULTANT called for under this AGREEMENT, is or are suspended, canceled, or abandoned by the FKAA, CONSULTANT shall be given five days prior written notice of such action and shall be compensated for the services provided and reimbursable expenses incurred up to the date of suspension, cancellation or abandonment. CONSULTANT agrees to provide all documents to the FKAA (specifically those referenced within). Further, prior to CONSULTANT'S destruction of any of the above referenced documents, the FKAA shall be notified and allowed a reasonable period of time to gain access to and make copies of any such documents. Upon any termination of this AGREEMENT, CONSULTANT agrees that it shall use its best efforts to work harmoniously with any successor who enters an AGREEMENT to provide services for the FKAA in order to provide for a smooth transition period.

R. Indemnification

CONSULTANT will at all times indemnify, save and hold harmless and defend the FKAA, its officers, agents (the term agents shall not include the CONTRACTOR(s), any subcontractors, any materialman or others who have been retained by the FKAA or CONTRACTOR, or materialman to supply goods or services to the project) and employees, from and against liability, claim, demand, damage, loss, expense or cause of action and costs (including attorney's fees at trial or appellate levels) to the proportionate extent arising out of negligent action of CONSULTANT, its agents, servants or employees in the performance of services under this AGREEMENT. The indemnifications contained herein shall survive the expiration or earlier termination of this AGREEMENT

Nothing in this AGREEMENT shall be deemed to affect the rights, privileges and immunities of the FKAA as set forth in Florida Statutes 768.28.

S. Interest of CONSULTANT

CONSULTANT covenants that it presently has no interest and shall not acquire any interest, direct or indirect, in any Project to which this AGREEMENT pertains or any other interest which would

conflict in any manner or degree with the performance of its service hereunder. CONSULTANT further covenants that in the performance of this AGREEMENT, no person having such interest shall be employed.

T. Prohibited Practices

CONSULTANT during the period of this AGREEMENT shall not hire, retain, or utilize for compensation any member, officer, or employee of FKAA or any person who, to the knowledge of CONSULTANT, has a conflict of interest.

U. Compliance With Laws

1. CONSULTANT shall comply with the applicable requirements of State, Federal and applicable County laws and all Codes of Ordinances of the local municipality as amended from time to time, and that exist at the time of building permit issuance.
2. For Projects involving work under Federal or State Grantors or Approving Agencies, the FKAA and CONSULTANT shall review and approve the applicable required provisions or any other supplemental provisions as may be included.

V. Jurisdiction; Venue

CONSULTANT hereby covenants, consents and yields to the jurisdiction of the State Courts of the 16<sup>th</sup> Judicial Circuit, in and for Monroe County, Florida. Any dispute between CONSULTANT and the FKAA shall be governed by the laws of Florida with venue in the State Courts of the 16<sup>th</sup> Judicial Circuit, in and for Monroe County, Florida.

W. Attorney's Fees

In the event a suit is filed in court arising out of this AGREEMENT, the prevailing party shall be entitled to recover from the other party all costs incurred, including reasonable attorney's fees and costs on appeal.

X. Internal Dispute Between FKAA and Consultant

The Executive Director shall be the final decision maker regarding internal disputes between FKAA and CONSULTANT.

Y. Project Scheduling

CONSULTANT shall provide scheduling to FKAA, within ten (10) days of the date of commencement as contained within this AGREEMENT. During the course of the work, CONSULTANT shall provide monthly updates with a written description of any changes in the schedule.

Z. Extent of Agreement

This AGREEMENT represents the entire integrated AGREEMENT between the FKAA and CONSULTANT and supersedes all prior negotiations, representations or AGREEMENTS, written or oral. This AGREEMENT may not be amended, changed, modified, or otherwise altered in any way, at any time after the execution hereof, except by approval of the FKAA Board of Directors and CONSULTANT.

AA. Audit and/or Access to Records

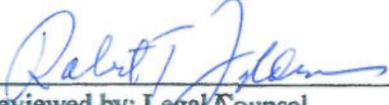
1. At all times during the period that the CONTRACT is in force and for a period of not less than three (3) years thereafter, the CONTRACTOR shall provide all authorized representatives of the FKAA with full access/audit to all its financial records that pertain to services performed and determination of amounts payable under the CONTRACT including access to appropriate individuals with knowledge of financial records and full access to all additional records, that pertain to services performed and determination of amounts payable under the CONTRACT; permitting such representatives to examine, audit and copy such records at the site at which they are located. Such access/audit shall include both announced and unannounced inspections and on-site audits.
2. Audits conducted under this provision shall be in accordance with generally accepted auditing standards and within established procedures and guidelines of the reviewing or auditing agency.
3. This right to access/audit clause applies to financial records pertaining to all contracts, all contract change orders, and all contract amendments. In addition, this right to access applies to all records pertaining to all contracts, additional work clause items and contract amendments.
4. To the extent the records pertain directly to contract performance. If there is any indication that fraud, gross abuse or corrupt practices may be involved; or if the CONTRACT is terminated for default or for convenience.
5. If an audit, litigation, or other action involving the records is started before the end of the three (3) year period, the records must be retained until all issues arising out of the action are resolved or until the end of the three (3) year period, whichever is later.

IN WITNESS WHEREOF, the FCAA has caused these presents to be executed in its name by its Executive Director, and attested and its official Seal to be hereunto affixed by its Records Clerk, and CONSULTANT has hereunto set its hand and Seal the day and year first written above:

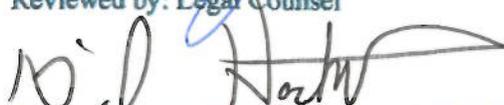
**FLORIDA KEYS AQUEDUCT AUTHORITY**

  
\_\_\_\_\_  
Kerry Shelby, Executive Director

Date 10.4.2022

  
\_\_\_\_\_  
Reviewed by: Legal Counsel

Date 10/4/22

  
\_\_\_\_\_  
David Hackworth, P.E., Director of Capital Projects

Date 10/4/22

Engineering

**CONSULTANT**

  
\_\_\_\_\_  
Brian Stark/Sole Owner

Date: 9/12/2022

**BOARD APPROVAL DATE:** September 30, 2022

**CORPORATE ACKNOWLEDGMENT  
STATE OF FLORIDA  
COUNTY OF MONROE**

The foregoing instrument was acknowledgment before me this 12<sup>th</sup> September day of 2022, by Brian Stark (name of officer or agent title of officer of agent, of (name of corporation acknowledging), Control System Consulting LLC a (State or place of incorporation) Florida corporation, on behalf of the corporation. He/She is (personally know to me) (or has produced identification) FL DL (type of identification) as identification and (did/did not) take an oath.

*Tatiana Laboy*  
Signature of Person Taking Acknowledgment



TATIANA LABOY  
Notary Public  
State of Florida  
Comm# HH262630  
Expires 5/9/2026

Tatiana Laboy  
Name of Acknowledger – Typed Printed or Stamped



**EXHIBIT C  
SAMPLE INVOICE  
COST NOT TO EXCEED FORMAT**

Florida Keys Aqueduct Authority

Project No. \_\_\_\_\_  
Purchase Order No. \_\_\_\_\_  
Project No. \_\_\_\_\_

Date \_\_\_\_\_  
FKAA Ref. No. \_\_\_\_\_  
Invoice No. \_\_\_\_\_

Description of services under Project No.

Period ending:

LABOR

Class	Employee	Rate	Hours	Amount
-------	----------	------	-------	--------

Subtotal	\$
----------	----

EXPENSES

Auto Rental  
Postage/Freight  
Air Transportation  
Print/Reprographics  
Supplies

Subtotal Expenses

TOTAL AMOUNT DUE THIS INVOICE	\$
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COST SUMMARY

Contract Amount	\$
Amount Earned This Period	\$
Amount Previously Earned	\$
Amount Remaining	\$

**EXHIBIT C (Continued)**  
**SAMPLE INVOICE**  
**LUMP SUM FORMAT**

INVOICE

Florida Keys Aqueduct Authority

Project No. \_\_\_\_\_  
Purchase Order No. \_\_\_\_\_  
Project No. \_\_\_\_\_

Date \_\_\_\_\_  
FKAA Ref. No. \_\_\_\_\_  
Invoice No. \_\_\_\_\_

Description of services under Project No. \_\_\_\_\_

Period ending: \_\_\_\_\_

Total Fee	\$
_____ % Complete	\$
Less Previous Billings	
Total Earned This Period	\$

TOTAL AMOUNT DUE THIS INVOICE

Exhibit A  
TASK ORDER NO. 1  
Agreement for Services  
Florida Keys Aqueduct Authority (FKAA) and  
Control System Consulting LLC (CSC)

PURPOSE

The purpose of this Task Order is to provide design review, programming and services during construction services related to Florida Keys Aqueduct Authority's (OWNER) instrumentation and controls system for various Capital Improvement projects.

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## SCOPE OF SERVICES

Control System Consulting (CONSULTANT) will provide Instrumentation and Control System (I&C) and SCADA system design and construction review services as well as SCADA system programming services as indicated below. Since this task order will cover several capital projects at various stages of design and construction and each with varying I&C needs; specific tasks will be defined by function and then assigned to the various projects based on the needs of the project.

### 1. Review services

Review services will be at the request of the FKAA and will include review of the following:

1. Design Review - reviewing Engineer provided drawings and specification related to Instrumentation and controls with emphasis on maintaining FKAA standards.
2. Submittal Review – reviewing contractor submittals for Instrumentation and controls services and components versus the design documents and FKAA standards.
3. Other – At the request of the FKAA additional documentation will be reviewed

Comments will be uploaded via a word document to E-builder within 7 working days of notification. This task will be time and materials

### 2. Meetings and Coordination

At the request of the OWNER the CONSULTANT will attend progress meetings, coordination meetings and calls or other meetings as needed. All meetings will be remote via TEAMS unless otherwise stated in project specific section of this task order. Also included in the task will be project management activities including providing monthly status reports and invoices.

### 3. Factory Witnessed Testing

At the request of the OWNER the CONSULTANT will attend factory tests of control panels or other I&C equipment. CONSULTANT will travel to contractors testing facility and will act as OWNERS representative to verify panels are assembled per approved submittals and will witness contractors function test of the panels. CONSULTANT will sign off on contractor provided testing forms and will submit a report to the OWNER with an overview of the test. All travel will be pre-authorized by the FKAA with CONSULTANT providing the FKAA with current anticipated travel costs.

### 4. Startup Services

Startup services will driven by the contractor and include services needed to verify the operation of the I&C and SCADA components of a facility or project. CONSULTANT startup services should be performed following the contractor's own field testing which includes field wiring checks, instrument calibrations, certificate of proper installation for pumps, motors and valves. CONSULTANT startup testing will include the following:

Operational readiness test (ORT) – The purpose of this testing is to confirm that the control system including application software is ready for operation. In a combined effort between the CONTRACTOR and CONSULTANT, verify that the I/O assignment is correct by performing a

complete I/O checkout from the field devices to the PLC system including verifying the analog scaling is correct. In addition to I/O checkout; ORT2 will be used to operate each individual device in local and remote manual. The Operational readiness tests will be managed and supervised by the CONTRACTOR.

Performance Acceptance Testing (PAT) - CONSULTANT will perform a witnessed performance acceptance test (PAT) at the plant site with the OWNER staff in coordination with the CONTRACTOR's Performance Acceptance Testing to verify that software, displays, and other functions satisfy requirements of design. The PAT will use actual process equipment and devices and will demonstrate the automatic operation of the project based on design requirements. The Performance Acceptance testing will be managed and supervised by the CONTRACTOR. The OWNER and the CONTRACTOR shall witness the Performance Acceptance Test.

Since scheduling and managing startup activities is in the CONTRACTORS scope of services; CONSULTANT can only provide time and expenses for this task as an estimated rough order of magnitude. All travel will be pre-authorized by the FCAA with CONSULTANT providing the FCAA with current anticipated lodging costs. In the event the CONSULTANT cannot find lodging due to special events or that lodging costs will be unreasonably high the FCAA will assist CONSULTANT in obtaining adequate lodging.

## 5. SCADA System Programming Services

CONSULTANT will provide programming services based on design documents. See Appendix A for a detailed breakdown of programming services.

## CAPITAL PROJECTS – Construction Phase

The following projects are currently in the construction phase and include services are the capital projects to be included with this task order with detail on each task that will be performed.

### 1. Kermit H. Lewin Stock Island Reverse Osmosis Plant (SIRO)

The project includes the construction of a new reverse osmosis (RO) treatment facility, which will replace the existing Stock Island RO plant. The new facility includes a 4.0-mgd capacity RO system, a clean in place membrane system, chemical feed storage and feed systems, an attached permeate water clearwell with degasifiers, and a transfer pumping system to deliver the potable water produced to the distribution system. The facility will utilize 4 existing production wells for source water, and the existing injection well for byproduct water disposal. This project is currently in the construction phase and will include the following tasks as identified above:

#### A. Review Services

1. Review services – Review services will include contractor submittal reviews.
  - a. Up to 10 submittals will be reviewed.
2. Meetings and Coordination –
  - a. 20 monthly meetings progress meetings
  - b. 12 coordination meetings
  - c. Monthly project management
3. Factory Witness Testing (40 hrs, 2 trips)

The following witnessed tests are expected:

- Main plant PLC Panel
  - RIO panels
    - Train 1
    - Train 2
    - Train 3
    - Train 4
    - Chemical System
  - Switchgear PLC
4. Startup Services – The CONSULTANT will perform ORT and PAT startup services as requested by the FCAA and scheduled by the contractor. An estimate of 20 (4 trips) travel days on-site (160 hrs) will be used for this task.
- B. Programming Services - Programming services will include all tasks identified in Appendix A with the exception of developing draft process graphics which was completed under a separate project.

## 2. Stock Island RO Emergency Generator Facility

To support the new SIRO facility a new elevated Emergency generator facility was designed by Black & Veatch which includes two 2MW emergency generators along with a fuel delivery system. This project is currently in the construction phase and will include the following tasks:

- A. Review Services
1. Review services – Review services will include contractor submittal reviews.
    - a. Up to 10 submittals will be reviewed.
  2. Meetings and Coordination
    - a. 12 monthly meetings progress meetings
    - b. 6 coordination meetings
    - c. Monthly project management
  3. Factory Witness Testing – (one trip 16 hrs)
 

The following witnessed tests are expected:

    - Generator Building RIO
  4. Startup Services – The CONSULTANT will perform ORT and PAT startup services as requested by the FCAA and scheduled by the contractor. It is anticipated that one trip will be required to perform ORT and PAT activities (5 travel days, 1 trip). Final testing once the SIRO facility has been started up will be done remotely.
- B. Programming Services – None anticipated. Programming services provided under SIRO project.

## 3. Florida City Electrical Improvements

An evaluation of the Electrical service gear for the Florida City WTP completed by Black & Veatch identified several areas that required replacement due to aging infrastructure. The subsequent design called for the repurposing of an existing structure to become a new air-conditioned electrical room with new switch gear, PLC control panel and motor control center. In addition, the service was redesigned to provide a third level of failure protection which included adding two new 4160 transformers and replacing existing automatic transfer switches with manual transfer switches. This project is currently nearing the end of the construction phase and will include the following tasks:

- A. Review Services

1. Review services – Review services will include contractor submittal reviews.
    - a. Up to 6 submittals will be reviewed.
  2. Meetings and Coordination
    - a. 4 monthly meetings progress meetings
    - b. 4 coordination meetings
    - c. Monthly project management
  3. Factory Witness Testing – None anticipated
  4. Startup Services – None anticipated
- B. Programming Services - Programming services will be limited to updating existing Pipeline and Controlman Wonderware applications with a single one-line diagram graphic. Specific programming tasks will be defined under Appendix A with the following tasks provided:
- i. A.1 – Wonderware Graphics - (One graphic will be developed and linked to contractor programmed PLC.
  - ii. A.2 – Wonderware Database – Tags will be linked to contractor provided PLC addresses
  - iii. A.3 – Trending – Breaker status and power monitoring data will be added to the historian.

## CAPITAL PROJECTS – Design Phase

Projects in the design phase will include design review services only.

### 4. Florida City Diesel Pump Improvements Phase 1

Carollo Engineers is currently performing a preliminary evaluation and design of the diesel pumps at Florida City. This capital project is broken into separate phases; the current phase includes the preliminary design for two diesel pump upgrades, final design of a generator to power either VFD 7 or 8 and improvement specifications for lime softening unit 1. This scope of work will only include services related to the current design effort as follows:

- A. Review Services
  1. Review services – Review services will include design review.
    - a. 30% design review
    - b. 100% design review of VFD generator
    - c. Review of TU1 specifications
  2. Meetings and Coordination
    - a. 4 monthly meetings progress meetings
    - b. 2 coordination meetings
    - c. Monthly project management
    - d. Assist FKAA in providing historical data requests from Engineer
  3. Factory Witness Testing – None anticipated
  4. Startup Services – None anticipated
- B. Programming Services – None anticipated

### 5. Boca Chica – East Fire Pump Station Design

CPH is currently designing a new elevated EFI pump station to replace the existing fire pump station. The FS will be elevated above the Base Flood Elevation (BFE) and will consist of three 1,000 gpm

electric pumps (2 duty and 1 standby), along with a backup generator and fuel storage for operations during power outages. The project will also include modifications and additions of below ground piping to connect the existing 1.0 MG GST to the new FS. After construction of the new FS, the existing building A229 will be demolished.

A. Review Services

1. Review services will include design review of the following
  - a. 60% design review
  - b. 100% design review
  - c. Bid Document review
2. Meetings and Coordination
  - a. 3 coordination meetings to review design comments
  - b. Monthly project management
3. Factory Witness Testing – None anticipated
4. Startup Services – None anticipated

B. Programming Services – None anticipated

## CAPITAL PROJECTS – Miscellaneous

### 6. Miscellaneous Capital Projects

There are several projects that are close to final completion with minimal work remaining. These projects will only have a general project task which the FKAA can utilize for end of project activities such as:

- a. Final O&M reviews or other closeout submittals
- b. Progress and coordination Meetings
- c. Assistance with identifying punch list items
- d. Assistance with testing
- e. Interfacing equipment to the SCADA system
- f. Changes to programming requested by operations

Projects include:

1. Stock Island Distribution Station
2. Cross Key WWTP
3. Sigsbee
4. Boca Chica West Fire pump station

## Project Schedule

Project schedules are driven by the individual projects' construction schedule. The CONSULTANT will coordinate with the FKAA construction manager to synchronize CONSULTANT tasks with the contractor. Estimated end dates for the projects are as follows:

1. Kermit H. Lewin Stock Island Reverse Osmosis Plant – June 2024
2. SIRO Emergency Generator Facility – October 2023
3. Florida City Electrical Upgrades – January 2023
4. Florida City Diesel Pump Improvements Phase 1 – December 2022

5. Boca Chica – East Fire Pump Station Design – December 2022

## Payment

Compensation method shall be as shown in Table A, Schedule of Values for a total of \$323,670. SUBCONSULTANT shall provide FCAA a monthly invoice based upon the schedule of values along with a summary of activities performed under this Agreement. An estimated earned value (percent complete) for each sub task shall be the basis for lump sum (LS) progress payments and actual hours worked and approved expenses shall be the basis for T&M progress payments.

## Exhibit A-1 Budget

<b>Exhibit A-1 SCHEDULE OF VALUES</b>					
<b>Task</b>	<b>Type</b>	<b>Description</b>	<b>Labor</b>	<b>Expenses</b>	<b>Total</b>
<b>1</b>		<b>SIRO</b>			\$ 243,620
A	T&M	Review Services	\$ 40,880	\$ 11,500	\$ 52,380
B	LS	Programming Services	\$ 191,240	\$ -	\$ 191,240
<b>2</b>		<b>Stock Island RO Emergency Generator Facility</b>			\$ 26,210
A	T&M	Review Services	\$ 22,960	\$ 3,250	\$ 26,210
B	LS	Programming Services	\$ -	\$ -	\$ -
<b>3</b>		<b>Florida City Electrical Improvements</b>			\$ 11,200
A	T&M	Review Services	\$ 5,600	\$ -	\$ 5,600
B	LS	Programming Services	\$ 5,600	\$ -	\$ 5,600
<b>4</b>		<b>Florida City Diesel Pump Improvements-Phase1</b>			\$ 5,600
A	T&M	Review Services	\$ 5,600	\$ -	\$ 5,600
B	LS	Programming Services	\$ -	\$ -	\$ -
<b>5</b>		<b>Boca Chica – East Fire Pump Station (A229)</b>			\$ 5,040
A	T&M	Review Services	\$ 5,040	\$ -	\$ 5,040
B	LS	Programming Services	\$ -	\$ -	\$ -
<b>6</b>		<b>Misc</b>			\$ 32,000
A	T&M	Misc Capital Projects	\$ 30,000	\$ 2,000	\$ 32,000
<b>Task Order Total</b>					<b>\$ 323,670</b>

Exhibit B

Top Task	Sub Task	Task Description	Hrs/Rate	Billed Labor Cost	Travel/Housing	Task Total	
			\$ 140.00		400		
<b>1</b>		<b>SIRO</b>	<b>1,658</b>	<b>\$ 232,120</b>	<b>\$ 11,500</b>	<b>\$ 243,620</b>	<b>\$ 243,620</b>
T&M	1.A.1	Review Services	40	\$ 5,600	\$ -	\$ 5,600	
T&M	1.A.2	Meetings and Coordination	52	\$ 7,280	\$ -	\$ 7,280	
T&M	1.A.3	Factory Witness Testing	40	\$ 5,600	\$ 3,500	\$ 9,100	
T&M	1.A.4	Startup Services	160	\$ 22,400	\$ 8,000	\$ 30,400	
LS	1.B.1	Programming Services	1,366	\$ 191,240	\$ -	\$ 191,240	
<b>2</b>		<b>Stock Island RO Emergency Generator Facility</b>	<b>164</b>	<b>\$ 22,960</b>	<b>\$ 3,250</b>	<b>\$ 26,210</b>	<b>\$ 26,210</b>
T&M	2.A.1	Review Services	40	\$ 5,600	\$ -	\$ 5,600	
T&M	2.A.2	Meetings and Coordination	60	\$ 8,400	\$ -	\$ 8,400	
T&M	2.A.3	Factory Witness Testing	24	\$ 3,360	\$ 2,000	\$ 5,360	
T&M	2.A.4	Startup Services	40	\$ 5,600	\$ 1,250	\$ 6,850	
LS	2.B.1	Programming Services	0	\$ -	\$ -	\$ -	
<b>3</b>		<b>Florida City Electrical Improvements</b>	<b>80</b>	<b>\$ 11,200</b>	<b>\$ -</b>	<b>\$ 11,200</b>	<b>\$ 11,200</b>
T&M	3.A.1	Review Services	24	\$ 3,360	\$ -	\$ 3,360	
T&M	3.A.2	Meetings and Coordination	16	\$ 2,240	\$ -	\$ 2,240	
T&M	3.A.3	Factory Witness Testing	0	\$ -	\$ -	\$ -	
T&M	3.A.4	Startup Services	0	\$ -	\$ -	\$ -	
LS	3.B.1	Programming Services	40	\$ 5,600	\$ -	\$ 5,600	
<b>4</b>		<b>Florida City Diesel Pump Improvements-Phase 1</b>	<b>40</b>	<b>\$ 5,600</b>	<b>\$ -</b>	<b>\$ 5,600</b>	<b>\$ 5,600</b>
T&M	4.A.1	Review Services	20	\$ 2,800	\$ -	\$ 2,800	
T&M	4.A.2	Meetings and Coordination	20	\$ 2,800	\$ -	\$ 2,800	
T&M	4.A.3	Factory Witness Testing	0	\$ -	\$ -	\$ -	
T&M	4.A.4	Startup Services	0	\$ -	\$ -	\$ -	
LS	4.B.1	Programming Services	0	\$ -	\$ -	\$ -	
<b>5</b>		<b>Boca Chica – East Fire Pump Station (A229)</b>	<b>36</b>	<b>\$ 5,040</b>	<b>\$ -</b>	<b>\$ 5,040</b>	<b>\$ 5,040</b>
T&M	5.A.1	Review Services	24	\$ 3,360	\$ -	\$ 3,360	
T&M	5.A.2	Meetings and Coordination	12	\$ 1,680	\$ -	\$ 1,680	
T&M	5.A.3	Factory Witness Testing	0	\$ -	\$ -	\$ -	
T&M	5.A.4	Startup Services	0	\$ -	\$ -	\$ -	
LS	5.B.1	Programming Services	0	\$ -	\$ -	\$ -	
<b>6</b>		<b>Misc</b>	<b>0</b>	<b>\$ 30,000</b>	<b>\$ 2,000</b>	<b>\$ 32,000</b>	<b>\$ 32,000</b>
T&M	6.A.1	Misc Capital Projects	0	\$ 30,000	\$ 2,000	\$ 32,000	
			0	\$ -	\$ -	\$ -	
			0	\$ -	\$ -	\$ -	
<b>TOTAL</b>			<b>1,978</b>	<b>306,920</b>	<b>16,750</b>	<b>323,670</b>	<b>\$ 323,670</b>



## Appendix A – Programming Scope of Work

# Appendix A

## Programming Services

### Scope of Work

#### I. PROJECT DESCRIPTION

Based on referencing project

#### II. SCOPE OF WORK

The following tasks are the scope of work that Consultant will provide:

CONSULTANT will perform control system configuration work for the Florida Keys Aqueduct Authority SCADA System including Modicon programmable logic controllers (PLCs) and Wonderware Interface (Wonderware) under this scope of services.

Control system configuration (application programming) is that software which provides functions unique to this Project. The work includes configuring databases, tables, displays, parameter lists, ladder logic and control strategies required to implement functions unique to this project.

The software process control strategies will be implemented as defined in the loop description section of Design documents, as shown on the Process and Instrumentation Diagrams (P&IDs) and/or loop drawings, and as shown on the PLC Input/Output (I/O) list.

#### Task A - Programming Development Services

##### A.1 - Wonderware Graphics

Graphics will be developed to display process controls and information based on FKAA standards, design documents and input from FKAA staff. This task will include modifying or creating a new Wonderware application and integrating the new graphics, database, alarms, trends and other features needed to provide a complete system.

- Design draft and final process graphics displays including linking process graphics to Wonderware tagname database. Draft graphics will be submitted for FKAA review prior to finalizing.
- Install and test the operator workstation software on the development system.
- Install Wonderware application software at the plant site and test.

*Deliverables: Draft and Final display screens.*

##### A.2 - Wonderware Database

- Specify and input the Wonderware database

- Configure alarm points.
- Configure access lists
- Maintain database until completion of Performance Acceptance Testing.

#### A.3 – Trending

Historical data consists of data storage that is required for trending or reporting of analog and digital values to analyze process performance.

CONSULTANT will configure the Wonderware Historian to log the following:

- All analog inputs
- All motor operated equipment running status and PLC start commands
- All valve open and close states and commands
- All Process values, control values and setpoints related to process control PID loops
- All previous day flow totals
- All previous day analytical averages
- All data values required for reporting
- All previous day motor runtime
- Other data as requested by the FKAA or identified in design documents

#### A.4 – PLC Application Software

The CONSULTANT will develop PLC application code based on design documents and FKAA input. PLC application code will include equipment and process control simulation that will allow for testing of basic equipment control and sequences in a test environment. The CONSULTANT will use current FKAA programming standards when developing code and will

- Identify location for control and calculation functions.
- Identify I/O requirements for PLC-to-PLC data communication requirements
- Define PLC programming formats and configuration blocks
- Develop the PLC functional software requirements and define analog control loop tuning parameters.
- Define sequential logic and analog control requirements for special control strategies executed in the PLC.
- Generate ladder-logic, structure text and/or function block programs for each PLC.
- Configure control strategies.
- Document programs.

*Deliverables: Final PLC application file.*

#### A.5 – I/O Listing

The P&ID drawings and IO list in design documents will be the basis for developing the IO list addressing assignments for the PICS contractor. CONSULTANT will maintain the IO list and coordinate with the PICS contractor with any changes made to point assignments or functions.

*Deliverables: Final IO Listing in electronic format.*

#### A.6 – Development System

Either the contractor or the FKAA will provide a development system consisting of the following:

- Windows workstation with the current version of Windows used in the SCADA system.
- Modicon PLC, PLC rack, PLC rack mounted power supply.
- Any PLC programming or Wonderware licenses required for development

CONSULTANT will load the Engineering workstation with Florida Keys Aqueduct Authority's current version of Wonderware's Intouch, Wonderware's IO driver, and all software necessary to communicate with the project PLC.

CONSULTANT will setup application software, operate, and maintain the configuration of the development system while located in CONSULTANT's office. This development system will be utilized to develop the Wonderware and PLC applications and test the application software prior to software factory witness testing and subsequent installation in the field.

This effort consists of:

- Setup application software for the PLC/Wonderware, and verify proper communication.
- Perform periodic backups on system to protect incremental work from being lost in the event of a failure.
- Maintain a list of hardware and software supplied to CONSULTANT.
- Deliver development system to the job site or other location as identified by the FKAA following the software factory witness testing.

*Deliverables: Hardware and Software Inventory in electronic format.*

#### A.7 - Factory Acceptance Testing

A software Factory Acceptance Test (FAT) will be performed prior to loading software in the field. The purpose of this test is to demonstrate that the control system application software is complete and ready for installation at the plant site. The Florida Keys Aqueduct Authority will witness the FAT and provide comments of any software deficiencies for correction by CONSULTANT. The criteria for acceptance of the FAT is based upon the previously agreed upon control system narratives and I/O documents. All items found deficient will be corrected and re-tested by CONSULTANT.

To aid in the in-house application software testing, a simulation program file will be developed to provide appropriate limit switch feedback, equipment run status feedback, and appropriate analog data entry values as well as basic process control feedback.

The location of the FAT will be coordinated with the FKAA but is assumed to be in the lower Keys. Following the FAT any development system equipment will be turned over to the FKAA or the Contractor.

The software FAT is completed independently and separately from any control panel tests. Control panel tests are completed as part of Witnessed panel factory tests and used to verify panel wiring. Software FAT is to verify software functions and uses software to simulate IO points.

*Deliverable: Signed Off Factory Acceptance Test Forms*

## **Task B – Documentation**

CONSULTANT will provide the FKAA with documentation of the control system application software. Documentation will cover those functions that have been configured by CONSULTANT. Documentation will include draft and final copies of:

- Control system narratives / loop descriptions utilized for software development.
- Testing forms
- Annotated and documented PLC logic in electronic format.
- IO list
- Testing forms and procedures will be in electronic format.

### **B.1 – Narratives**

The narrative / loop description in the design documents will be used as the basis for Application Programming. The narratives will be updated to reflect any control philosophy changes throughout the project.

*Deliverables: Control Narratives*

### **B.2 – Testing Forms**

Prior to testing, CONSULTANT will develop and submit to the Florida Keys Aqueduct Authority a test plan. The Florida Keys Aqueduct Authority will have two weeks to review the test plan. Upon receipt of the comments from the test plan, CONSULTANT will revise the test plan to incorporate appropriate comments.

#### **B.2.1 – Factory Acceptance Test (FAT) Testing Forms**

CONSULTANT will develop a document to be used as a guideline for documenting and testing of the PLC and Wonderware application software. The document will be submitted to the Florida Keys Aqueduct Authority for review, and comments will be incorporated into the document. The Factory Acceptance Test Procedure document will serve as the basis for testing and verification of the PLC/Wonderware application software at the FAT. Purely logic driven tests will be identified in the FAT test forms that will not be retested in the field. For example, motor runtime calculation will be tested during the FAT to verify runtimes are calculated correctly and will not be retested in the field.

*Deliverable: Factory Acceptance Test Procedure*

#### **B.2.2 – Operational Readiness Test Part 2 (ORT2) Testing Forms**

CONSULTANT will develop an Operational Readiness Test Part 2 (ORT2) procedure document to be used as a guideline for documenting and testing of the PLC IO in the control panel factory test as well as in the field prior to startup. This document will include I/O checkout sheets and will be based on the current IO list. The Operational

Readiness Testing document will serve as the basis for starting the testing of the PLC/Wonderware in the field.

*Deliverable: Operational Readiness Test Forms*

#### B.2.3 – Performance Acceptance Test (PAT) Testing Forms

CONSULTANT will develop a document to be used as a guideline for documenting and testing that software, graphic displays, and other functions satisfy requirements of this scope of work. The PAT testing forms will be a subset of the FAT testing forms using actual plant equipment and instruments; purely software functions will not be retested in the field. This document will be submitted to the Florida Keys Aqueduct Authority for review, and comments will be incorporated into the document. The document will serve as the basis for the performance acceptance testing protocol.

*Deliverable: Performance Acceptance Testing Forms*

### Task C – Training

Training will be provided for the OWNER's operations, maintenance, and management staff on the day-to-day use and operation of the facility through the Wonderware application based upon approved control narratives and Wonderware graphics. CONSULTANT provided training will be conducted on-site at the facility.

The following CONSULTANT training will be provided.

#### C.1 – Process Control

Two 4 hour classroom training sessions for up to 8 attendees on the process control functions for operators. Specific topics covered will be based upon approved control narratives and will cover PLC/Manual and PLC/Automatic control. Local control of equipment will not be covered as this should be provided by the CONTRACTOR or equipment supplier.

## III. ASSUMPTIONS

In addition to any assumptions stated in Section II, Scope of Services, the following items are assumed:

- The supplier is assumed to be Modicon for PLCs and Wonderware Intouch for software.
- All development system hardware is provided by the contractor or the FKAA.
- Base software version levels will be determined at the project kickoff meeting and frozen for the duration of the project. Updates to base software are not included in this scope of work. Current versions are InTouch v20R2 and Control Expert v15.1
- The contractor or FKAA is responsible for all shipping costs for the development system.
- Network configuration services such as loading, configuring, and troubleshooting network problems are not included in this scope of services.
- No Vijeo HMI programming is included unless otherwise stated

- The contractor will provide proper documentation verifying IO checkout has been completed with any subcontractors (Electrician and PICs) prior to the start of CONSULTANT ORT or PAT activities.
- All documentation and deliverables will be in editable electronic format (Microsoft Word and/or Excel).
- All training will be held at the project site and will be held during a single trip.
- The base IO count will not vary by more than 10%
- FKAA will have two weeks to review and provide comments in electronic format of any draft documents.

#### **IV. OBLIGATIONS OF THE FKAA**

The FKAA will provide certain assistance to the CONSULTANT in completion of the tasks identified, including, but not limited to the following:

- A) Provide access to the plant.
- B) Provide technical staff as needed (electrician and I/C tech) during testing.
- C) Provide operational staff as needed during witnessed PAT testing.
- D) Provide licensing for Wonderware and PLC programming software packages.

#### **V. DELIVERABLES**

The CONSULTANT will provide the following deliverables to FKAA:

- A) As stated under the individual tasks listed above